

Appln. No. 09/868,497
Amendment dated December 28, 2004
Reply to Office Action of October 8, 2004

Amendments to the Claims:

Please amend claims 1-14 as follows. The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended). A digital modulation signal generating apparatus, comprising:

a band signal generator which generates a base band signal;

a carrier signal generator which generates a carrier signal;

5 an orthogonal modulator ~~for generating~~ which generates a
digital modulation signal of a predetermined channel that
corresponds to a frequency of the carrier signal upon receipt of
~~a the base band signal outputted from generated by the base band~~
signal generator and ~~a the carrier signal outputted from~~
10 generated by the carrier signal generator;

an amplifier ~~for amplifying~~ which amplifies a the digital
modulation signal generated by the orthogonal modulator;

an output terminal ~~for outputting~~ which outputs a the
digital modulation signal amplified by the amplifier;

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15 a first level varying ~~means~~ member provided between the base band signal generator and the orthogonal modulator, ~~for varying~~ which varies a level of the base band signal, and ~~inputting~~ inputs the base band signal which has had the level varied to the orthogonal modulator;

20 a second level varying ~~means~~ member provided between the amplifier and the output terminal, ~~for attenuation varying~~ which attenuates and varies a level of an output signal ~~of output from~~ the amplifier, and ~~outputting~~ outputs the output signal which has had the level attenuated and varied from the output terminal;

25 output level specifying ~~means for specifying~~ member which specifies an output level value of ~~a~~ the digital modulation signal ~~outputted~~ output from the output terminal;

 a judgment ~~means for judging~~ section which judges whether or not ~~an~~ the output level value of ~~a~~ the digital modulation signal
30 specified by the output level specifying ~~means~~ member is higher than a predetermined value or a predetermined range; and

 a level diagram switching ~~means for setting~~ section which sets the first level varying ~~means~~ member and the second level varying ~~means~~ member so that ~~a~~ the digital modulation signal
35 ~~outputted~~ output from the output terminal is a predetermined attenuation quantity value which makes desired carrier leak characteristics compatible with desired mutual modulation

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distortion characteristics, respectively, based on ~~an~~ the output
level value of ~~a~~ the digital modulation signal specified by the
40 output level specifying means and ~~the~~ a judgment result caused by
the judgment ~~means~~ member.

Claim 2 (Currently Amended). A digital modulation signal
generating apparatus according to claim 1, ~~characterized in that~~
wherein said level diagram switching ~~means~~ member is adopted to
switch a level diagram inside of the apparatus between a state in
5 which carrier leak characteristics precedes mutual modulation
distortion characteristics and a state in which mutual modulation
distortion characteristics precedes carrier leak characteristics
according to ~~an~~ the output level value of ~~a~~ the digital
modulation signal ~~outputted~~ output from said output terminal
10 specified by said output level specifying ~~means~~ member and ~~the~~ a
judgment result of said judgment ~~means~~ member.

Claim 3 (Currently Amended). A digital modulation signal
generating apparatus according to claim 2, ~~characterized in that~~
wherein said level diagram switching ~~means~~ section is adopted to
set an attenuation quantity of said first level varying ~~means~~
5 member to be small so that a level difference between ~~a~~ the
digital modulation signal of ~~a~~ the predetermined channel

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outputted output from said output terminal and a residual carrier
is equal to or larger than a predetermined value in the case
where ~~an~~ the output level value specified by said output level
10 specifying ~~mean~~ member is lower than the predetermined value or
predetermined range by said judgment ~~means~~ section, and to set an
attenuation quantity of said second level varying ~~means~~ member so
that ~~a~~ the digital modulation signal of ~~a~~ the predetermined
channel of ~~an~~ the output level value specified by said output
15 level specifying ~~means~~ member is outputted output from said
output terminal.

Claim 4 (Currently Amended). A digital modulation signal
generating apparatus according to claim 2, ~~characterized in that~~
wherein said level diagram switching ~~means~~ section is adopted to
set an attenuation quantity of said first level varying ~~means~~
5 member to be small so that a level difference between ~~a~~ the
digital modulation signal of ~~a~~ the predetermined channel
outputted output from said output terminal and a mutual
modulation distortion is equal to or larger than a predetermined
value ~~in the case where~~ when it is judged that an output level
10 value specified by said output level specifying ~~mean~~ member is
higher than ~~the~~ a predetermined value or a predetermined range by
said judgment ~~means~~ section, and to set an attenuation quantity

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of said second level varying ~~means~~ member so that ~~a~~ the digital modulation signal of ~~a~~ the predetermined channel of ~~an~~ the output
15 level value specified by said output level specifying ~~means~~ member is ~~outputted~~ output from said output terminal.

Claim 5 (Currently Amended). A digital modulation signal generating apparatus according to claim 2, ~~characterized in that~~ wherein said level diagram switching ~~means~~ section is adopted to set said first level varying ~~means~~ member so that a level
5 difference between ~~a~~ the digital modulation signal ~~outputted~~ output from said output terminal and a residual carrier contained therein is equal to or larger than a predetermined value or range by said judgment section when it is judged that an output level value specified by said output level specifying ~~means~~ member is
10 lower than the predetermined value or predetermined range; to set said second level varying ~~means~~ member so that ~~a~~ the digital modulation signal of said specified level value is ~~outputted~~ output from said output terminal; to set said first level varying ~~means~~ member so that a level of the digital modulation signal
15 ~~outputted~~ output from said output terminal and a level of the mutual modulation distortion contained therein are equal to or larger than a predetermined value when it is judged that said specified level value is higher than said predetermined value or

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said predetermined range; and to set said second level varying
20 means so that a digital modulation signal of said specified level
value is ~~outputted~~ output from said output terminal.

Claim 6 (Currently Amended). A digital modulation signal
generating apparatus according to claim 1, ~~characterized in that~~
wherein said digital modulation signal generating apparatus
further comprises a computation means for computing section which
5 computes a predetermined attenuation quantity value for said
first level varying ~~means member~~ and said second level varying
~~means member~~ set by said level diagram switching ~~means~~ section
based on ~~an~~ the output level value of ~~a~~ the digital modulation
signal specified by at least said output level specifying ~~means~~
10 member and the judgment result caused by said judgment ~~means~~
section.

Claim 7 (Currently Amended). A digital modulation signal
generating apparatus according to claim 1, ~~characterized in that~~
wherein said digital modulation signal generating apparatus
further comprises a storage means for storing section which
5 stores in advance in a table format a predetermined attenuation
quantity value for the first level varying ~~means member~~ and the

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second level varying ~~means~~ member set by said level diagram
switching ~~means~~ section.

Claim 8 (Currently Amended). A digital signal generating
apparatus comprising:

a base band signal generator which generates a base band
signal;

5 a carrier signal generator which generates a carrier signal;

an orthogonal modulator ~~for generating~~ which generates a
digital modulation signal of a predetermined channel that
corresponds to a frequency of the carrier signal upon the receipt
of ~~a~~ the base band signal ~~outputted from~~ generated by the base
10 band signal generator and ~~a~~ the carrier signal ~~outputted from~~
generated by the carrier signal generator;

an amplifier ~~for amplifying~~ which amplifies ~~a~~ the digital
modulation signal generated by the orthogonal modulator;

an output terminal ~~for outputting~~ which outputs ~~a~~ the
15 digital modulation signal amplified by the amplifier;

a first level varying ~~means~~ member provided between the base
band signal generator and the orthogonal modulator, ~~for varying~~
which varies a level of the base band signal, and ~~inputting~~
inputs the base band signal which has had the level varied to the
20 orthogonal modulator;

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a second level varying ~~means member~~ provided between the orthogonal modulator and the amplifier, ~~for attenuation varying which attenuates and varies~~ a level of ~~a the~~ digital modulation signal outputted from the orthogonal modulator, and ~~inputting~~ 25 ~~inputs the digital modulation signal which has had the level attenuated and varied~~ to the amplifier;

a third level varying ~~means member~~ provided between the amplifier and the output terminal, ~~for attenuation varying which attenuated and varied~~ a level of an output signal of ~~output from~~ 30 the amplifier, and ~~outputting~~ ~~outputs the output signal which has had the level attenuated and varied~~ from the output terminal;

~~an output level specifying means for specifying member which specifies~~ an output level value of ~~a the~~ digital modulation signal ~~outputted output~~ from the output terminal;

35 a judgment ~~means for judging section which judges~~ whether or not ~~an the~~ output level value of ~~a the~~ digital modulation signal specified by the output level specifying ~~means member~~ is higher than a predetermined value or a predetermined range; and

a level diagram switching ~~means for setting section which sets~~ 40 ~~sets~~ the first level varying ~~means member~~, said second level varying ~~means member~~, and said third level varying ~~means member~~ to a predetermined attenuation value, respectively, so that ~~a the~~ digital modulation signal ~~outputted output~~ from the output

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terminal makes desired carrier leak characteristics compatible
45 with desired mutual modulation distortion characteristics based
on ~~an~~ the output level value of ~~a~~ the digital modulation signal
specified by the output level specifying ~~means~~ member and ~~the~~ a
judgment result caused by the judgment ~~means~~ section.

Claim 9 (Currently Amended). A digital modulation signal
generating apparatus according to claim 8, ~~characterized in that~~
wherein said level diagram switching ~~means~~ section is adopted to
switch a level diagram inside of the apparatus between a state in
5 which carrier leak characteristics precedes mutual modulation
distortion characteristics and a state in which mutual modulation
distortion characteristics precedes carrier leak characteristics
according to ~~an~~ the output level value of ~~a~~ the digital
modulation signal ~~outputted~~ output from said output terminal
10 specified by said output level specifying ~~means~~ section and the
judgment result of said judgment ~~means~~ section.

Claim 10 (Currently Amended). A digital modulation signal
generating apparatus according to claim 8, ~~characterized in that~~
wherein said level diagram switching ~~means~~ section is adopted to
set an attenuation quantity of said first level varying ~~means~~
5 member to be small so that a level difference between ~~a~~ the

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digital modulation signal of ~~a~~ the predetermined channel
~~outputted output~~ from said output terminal and a residual carrier
is equal to or larger than a predetermined value ~~in the case~~
~~where~~ when it is judged that ~~an~~ the output level value specified
10 by said output level specifying ~~means~~ member is lower than the
predetermined value or the predetermined range by said judgment
~~means~~ section, to set an attenuation quantity of said second
level varying ~~means~~ member to be large so that a level difference
between ~~a~~ the digital modulation signal of ~~a~~ the predetermined
15 channel ~~outputted output~~ from said output terminal and a residual
carrier is equal to or larger than a predetermined value, and to
set an attenuation quantity of said third level varying ~~means~~
member so that ~~a~~ the digital modulation signal of ~~a~~ the
predetermined channel of the output level value specified by said
20 output level specifying ~~means~~ section is ~~outputted output~~ from
said output terminal.

Claim 11 (Currently Amended). A digital modulation signal
generating apparatus according to claim 8, ~~characterized in that~~
wherein said level diagram switching ~~means~~ section is adopted to
set an attenuation quantity of said first level varying ~~means~~
5 member to be large so that a level difference between ~~a~~ the
digital modulation signal of ~~a~~ the predetermined channel

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outputted output from said output terminal and a mutual modulation distortion is equal to or larger than a predetermined value ~~in the case where~~ when it is judged that an output level value specified by said output level specifying ~~means~~ member is higher than the predetermined value or the predetermined range by said judgment ~~means~~ section, to set an attenuation quantity of said second level varying ~~means~~ member to be large so that a level difference between ~~a~~ the digital modulation signal of ~~a~~ the predetermined channel ~~outputted output~~ from said output terminal and a mutual modulation distortion is equal to or larger than a predetermined value, and to set an attenuation quantity of said third level varying ~~means~~ member so that ~~a~~ the digital modulation signal of ~~a~~ the predetermined channel of the output level value specified by said output level specifying ~~means~~ member is outputted output from said output terminal.

Claim 12 (Currently Amended). A digital modulation signal generating apparatus according to claim 8, ~~characterized in that~~ wherein said level diagram switching ~~means~~ section is adopted to set said first level varying ~~means~~ section and said second level varying ~~means~~ member so that a level difference between ~~a~~ the digital modulation signal ~~outputted output~~ from said output terminal and a mutual modulation distortion is equal to or larger

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than a predetermined value when it is judged that an output level
value specified by said output level specifying ~~means~~ member is
10 lower than the predetermined value or the predetermined range; to
set said third level varying ~~means~~ member so that ~~a~~ the digital
modulation signal of said specified level value is ~~outputted~~
output from said output terminal; to set said first level varying
~~means~~ member and said second level varying ~~means~~ member so that a
15 level difference between ~~a~~ the digital modulation signal
~~outputted~~ output from said output terminal and the mutual
modulation distortion contained therein is equal to or larger
than a predetermined value when it is judged that said specified
level value is higher than said predetermined value or said
20 predetermined range; and to set said third level varying ~~means~~
member so that ~~a~~ the digital modulation signal of said specified
level value is ~~outputted~~ output from said output terminal.

Claim 13 (Currently Amended). A digital modulation signal
generating apparatus according to claim 8, ~~characterized in that~~
wherein said digital modulation signal generating apparatus
further comprises a computation ~~means for computing~~ section which
5 computes a predetermined attenuation quantity value for said
first level varying ~~means~~ member, said second level varying ~~means~~
member, and said third level varying ~~means~~ member set by said

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level diagram switching ~~means~~ section based on ~~an~~ the output
level value of ~~a~~ the digital modulation signal specified by at
10 least said output level specifying ~~means~~ member and the judgment
result caused by said judgment means.

Claim 14 (Currently Amended). A digital modulation signal
generating apparatus according to claim ~~4~~ 8, ~~characterized in~~
~~that wherein~~ said digital modulation signal generating apparatus
further comprises a storage ~~means for storing~~ section which
5 stores in advance in a table format a predetermined attenuation
quantity value for the first level varying ~~means~~ member, the
second level varying ~~means~~ member, and the third level varying
~~means~~ member set by said level diagram switching ~~means~~ section.

10